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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/527,422	03/17/2000	Alexander I. Krymski	08305-070001	4176

7590

09/10/2004

Micron Technology, Inc.
c/o Tom D'Amico
Dickstein, Shapiro, Moran & Oshinsky
2101 L Street, NW
Washington, DC 20037-1526

EXAMINER

TILLERY, RASHAWN, N

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 09/10/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/527,422

Applicant(s)

KRYMSKI ET AL.

Examiner

Rashawn N Tillery

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-40 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 and 23-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 11, 16 and 22 is/are rejected.
- 7) ☒ Claim(s) 2-6, 8-10 and 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of the species directed to Figure 8 in the reply filed on June 22, 2004 is acknowledged. The traversal is on the ground(s) that each claim is directed to common subject matter. This is not found persuasive because the claims directed to the non-elected species would require a separate search.

Regarding Applicant's selection of claims 1-6, 8-10, 16-19, 21, 22, 29, 32, 38 and 39 being readable on the elected species, the examiner respectfully disagrees. The examiner has selected claims 1-6, 8-11 and 16-22 for examination as they are closely related to the elected species. Independent claims 26, 34 and 37 are all directed to a device or method for clamping a pixel readout line to a voltage greater than a voltage corresponding to a pixel signal.

The examiner notes that claims 1 and 29 were declared generic in compliance with the examiner's request. However, the proper generic claims are 1 and 16. The examiner apologizes for the inadvertent error and the confusion caused as a result.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 11, 16, 17 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Washkurak et al (US6704050).

Regarding claim 1, Washkurak discloses, in figure 3, a method of processing pixel levels, the method comprising:

clamping a pixel readout line to a voltage level less than a voltage corresponding to a pixel signal (clamp 146 sets the input to buffer 144 at a predetermined voltage);

subsequently coupling the pixel readout line to an output of an n-MOS source-follower (element # 18 in figure 4) and reading out the pixel signal onto the pixel readout line through the n-MOS source-follower (see col. 4, lines 6-17); and

storing a signal corresponding to the pixel signal that was read out (144).

Regarding claim 11, Washkurak discloses, in figure 4, passing the pixel signal that was read out through a p-MOS source-follower (24).

Regarding claim 16, Washkurak discloses, in figure 4, an image comprising:

a pixel readout line (inherent feature);

an active pixel sensor (10) including an n-MOS source-follower (18) through which signals sensed by the sensor can be read out to the pixel readout line, a first switch (22) that can be enabled to read out signals from the sensor and a reset switch (17);

a signal processing circuit (105) that can be coupled to the pixel readout line; and

a controller configured to provide control signals to cause the pixel readout line to be clamped to a voltage level less than a voltage corresponding to a signal sensed by the sensor, and subsequently to cause the sensor signal to be read out through the n-MOS source-follower to the pixel readout line and to be stored by the processing circuit (see col. 4, line 6 to col. 5, line 55).

Regarding claim 17, Washkurak discloses the controller is configured to provide a control signal to cause the first switch to be disabled while a previously stored sensor signal is being processed by the processing circuit (see col. 8, line 49 to col. 9, line 45).

Regarding claim 22, Washkurak discloses, in figure 4, an image comprising:

a pixel readout line (inherent feature);

an active pixel sensor (10) including an n-MOS source-follower (18) through which signals sensed by the sensor can be read out to the pixel readout line, a first switch (22) that can be enabled to read out signals from the sensor and a reset switch (17);

a signal processing circuit (105) that can be coupled to the pixel readout line;

a p-MOS source-follower (24) having an output that can be coupled to the processing circuit; and

a controller configured to provide control signals to cause the pixel readout line to be clamped to a voltage level less than a voltage corresponding to a signal sensed by the sensor, and subsequently to cause the sensor signal to be read out through the n-MOS source-follower to the pixel readout line and to be passed through the processing circuit through the p-MOS source-follower (see col. 4, line 6 to col. 5, line 55).

Allowable Subject Matter

Claims 2-6, 8-10 and 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 2, the prior art does not teach or fairly suggest a method of processing pixel levels comprising clamping a pixel readout line, subsequently coupling the pixel readout line and storing a signal, wherein

clamping the pixel readout line includes discharging a capacitance on the pixel readout line.

Regarding claim 6, the prior art does not teach or fairly suggest a method of processing pixel levels comprising clamping a pixel readout line, subsequently coupling the pixel readout line, storing a signal, clamping a capacitive storage node, subsequently coupling the pixel readout line and storing the signal on the capacitive storage node.

Regarding claim 18, the prior art does not teach or fairly suggest an imager comprising a pixel readout line, an active pixel sensor, a signal processing circuit, a controller and a third switch coupled between the pixel readout line and ground, wherein

the controller is configured to provide a control signal to cause the pixel readout line to be clamped by enabling the third switch.

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Regarding claim 19, the prior art does not teach or fairly suggest an imager comprising a pixel readout line, an active pixel sensor, a signal processing circuit and a controller, wherein

the processing circuit includes a capacitive storage node and the controller is configured to provide control signals to cause the capacitive storage node to be clamped.

Regarding claim 21, the prior art does not teach or fairly suggest an imager comprising a pixel readout line, an active pixel sensor, a signal processing circuit and a controller, wherein

the processing circuit includes a second capacitive storage node and the controller is configured to provide control signals to cause the reset switch in the pixel to be enabled.

Conclusion


1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krymski teaches an analog readout for an image sensor. Shaw et al teach a single chip camera active pixel sensor. Merrill teaches a triple slope pixel sensor and array. Funakoshi teaches an imager with a high-speed readout. Zhao et al teach an active pixel sensor soft reset circuit.
2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rashawn N Tillery whose telephone number is 703-305-0627. The examiner can normally be reached on 9AM-6:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RNT


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600